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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/876,368	06/07/2001	Bin Zhao	12569-03/NEC	1445

7590 07/03/2003

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EXAMINER

CURTIS, CRAIG

ART UNIT PAPER NUMBER

2872

DATE MAILED: 07/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/876,368

Applicant(s)

ZHAO, BIN

Examiner

Craig H. Curtis

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 14 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25, 26 and 28-33 is/are rejected.
- 7) ☒ Claim(s) 27 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 2872

DETAILED ACTION

Disposition of the Instant Application

- This Office action is responsive to Applicant's Amendment B filed on 14 April 2003, which has been made of record in the file as Paper No. 6.
- By this Amendment, Applicant has canceled without prejudice claims 1-24 and has newly added claims 25-33.
- Claims 25-33 are currently pending in the instant application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

- I. Claims 25, 26, 28-30, 32, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Li (6,212,313).

Li discloses the invention as claimed, including, inter alia, an interleaver (See Fig. 4A) comprising:

Art Unit: 2872

a birefringent filter assembly (birefringent crystal 1) comprising at least one spatial birefringent element, the birefringent element assembly providing two output components;

a reflector configured to direct the two components from the birefringent element assembly back through another birefringent element assembly; and

wherein each spatial birefringent element defines two light paths, each light path having a different optical path length and wherein a difference in optical path length between the two paths is provided by a material having an index of refraction greater than one (which could be interpreted as reciting that said material has an index of refraction greater than unity, which is necessarily the case) which is disposed within at least a portion of one of the first and second paths. See Fig. 4A.

Li further discloses wherein said birefringent element assembly comprises a plurality of spatial birefringent elements (conceiving birefringent crystal 1 as being four separate elements, taken from top to bottom or bottom to top).

Li still further discloses wherein said birefringent element assembly, and the reflector are configured so as to facilitate interleaving of a plurality of input beams simultaneously. See Fig. 4A.

Li additionally inherently discloses wherein said interleaved channels have spacing which is tunable.

Art Unit: 2872

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li (6,212,313).

Li discloses the claimed invention as set forth above with regard to claim 1 EXCEPT FOR additional teachings wherein said reflector(s) comprise a prism.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, however, to have used either prisms or two reflectors in lieu of reflector 280 taught by Li, for at least the purpose of achieving a desired routing scheme of a signal traversing said interleaver, since the examiner takes Official Notice of the art-recognized equivalence of reflectors and prisms, as well as the fact that the selection of any of these known equivalents as reflectors would be within the level of ordinary skill in the art.

Allowable Subject Matter

Art Unit: 2872

3. Claim 27 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form, including all of the limitations of the base claim and any intervening claims.

The claim is allowable over the prior art for at least the reason that the prior art fails to teach or to reasonably suggest, *an interleaver wherein, inter alia, the birefringent element assembly comprises a first birefringent element having an equivalent angular orientation of ϕ_1 , a second birefringent element having an equivalent angular orientation of ϕ_2 , and a third birefringent element having an equivalent angular orientation of ϕ_3 , having an order as alternatively recited*, as set forth in the claimed combination.

Response to Arguments

4. Applicant's arguments with respect to the claims have been considered but are have not been found persuasive.

Applicant initially asserts that the Li reference teaches the construction of an interleaver that does not appear to utilize a spatial birefringence [read: birefringent] assembly. The Examiner respectfully disagrees with this characterization of the Li reference by Applicant. As set forth above, as well as in the figures of the Li reference, birefringent crystal 1 spatially separates components of light, based on their respective polarization state, via birefringence. Moreover, each of the light paths depicted in Fig. 4A of Li have a different optical path length, one with the other and vice versa, due to the presence of element 220.

Art Unit: 2872

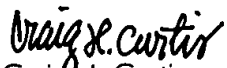
Contact Information

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The facsimile phone number for Art Unit 2872 is (703) 308-7721.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Andrey Chang', with a large, sweeping initial 'A' and a stylized 'C'.

**Andrey Chang
Primary Examiner
Technology Center 2800**

A handwritten signature in black ink, appearing to read 'Craig H. Curtis', written in a cursive style.

**Craig H. Curtis
Group Art Unit 2872
26 June 2003**